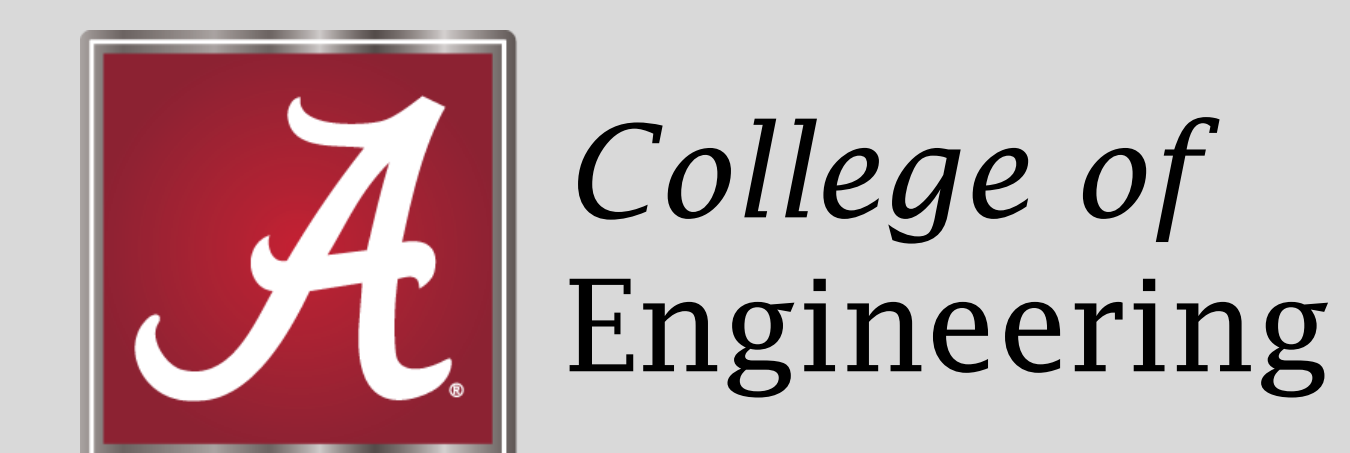


# Supercritical Fluid Impregnation of Polyolefins with Organometallic Complexes for Fundamental Investigations of Catalytic C-C Bond Cracking

Hassan A. Adisa<sup>1</sup>, James D. Sheehan<sup>1\*</sup>

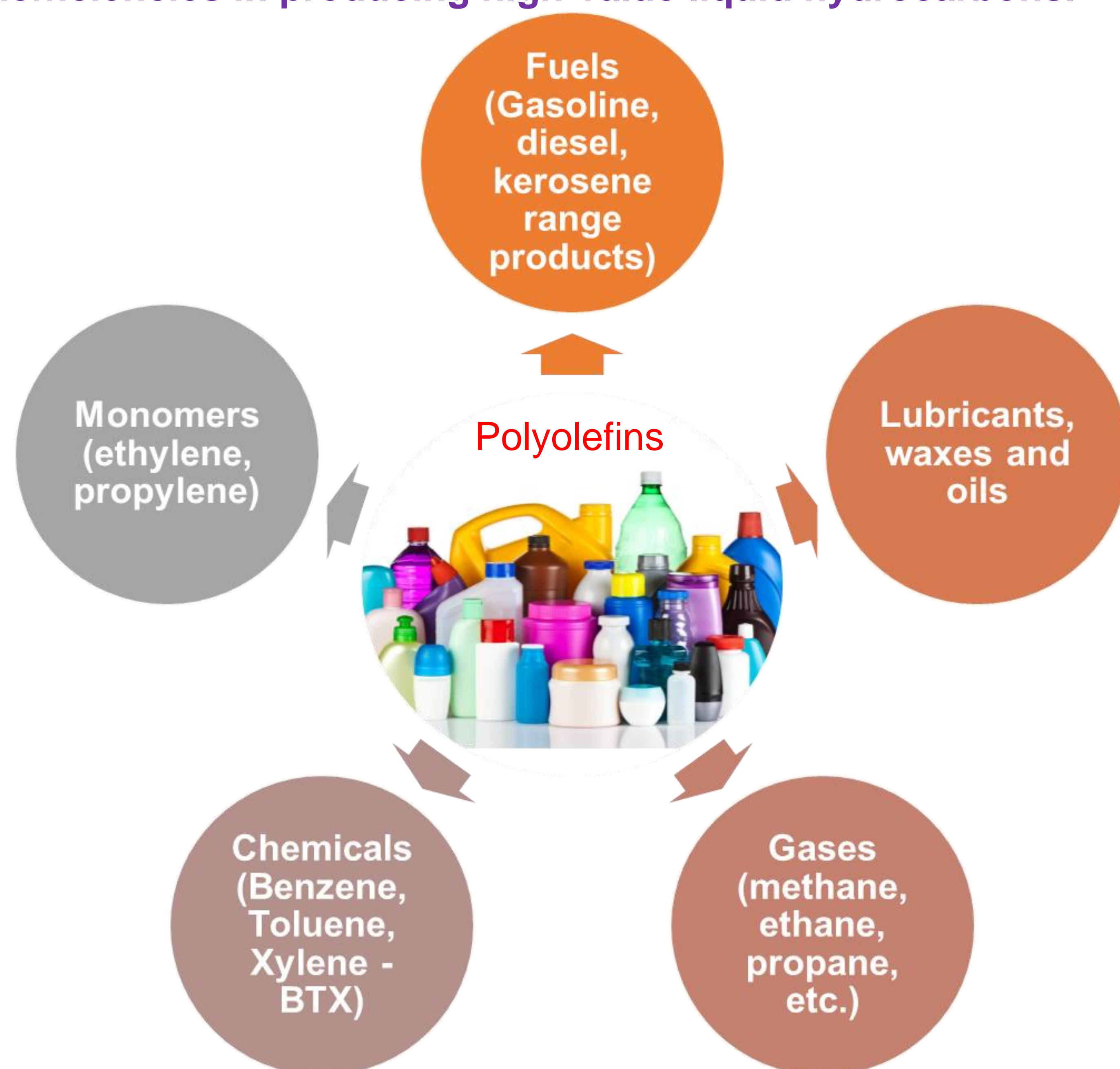
<sup>1</sup>Department of Chemical and Biological Engineering, University of Alabama

\*Corresponding Author Email: [jdsheehan@ua.edu](mailto:jdsheehan@ua.edu)



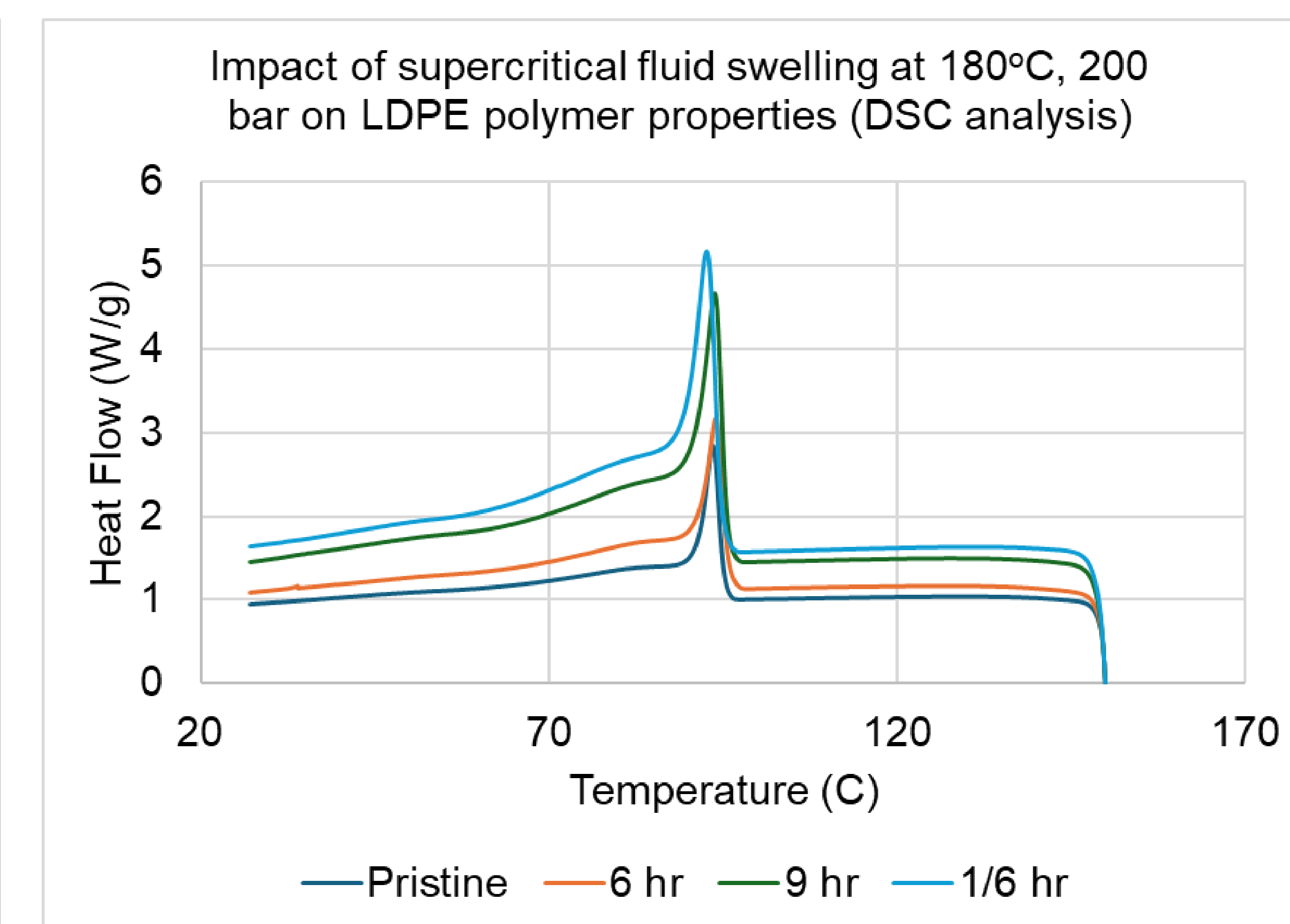
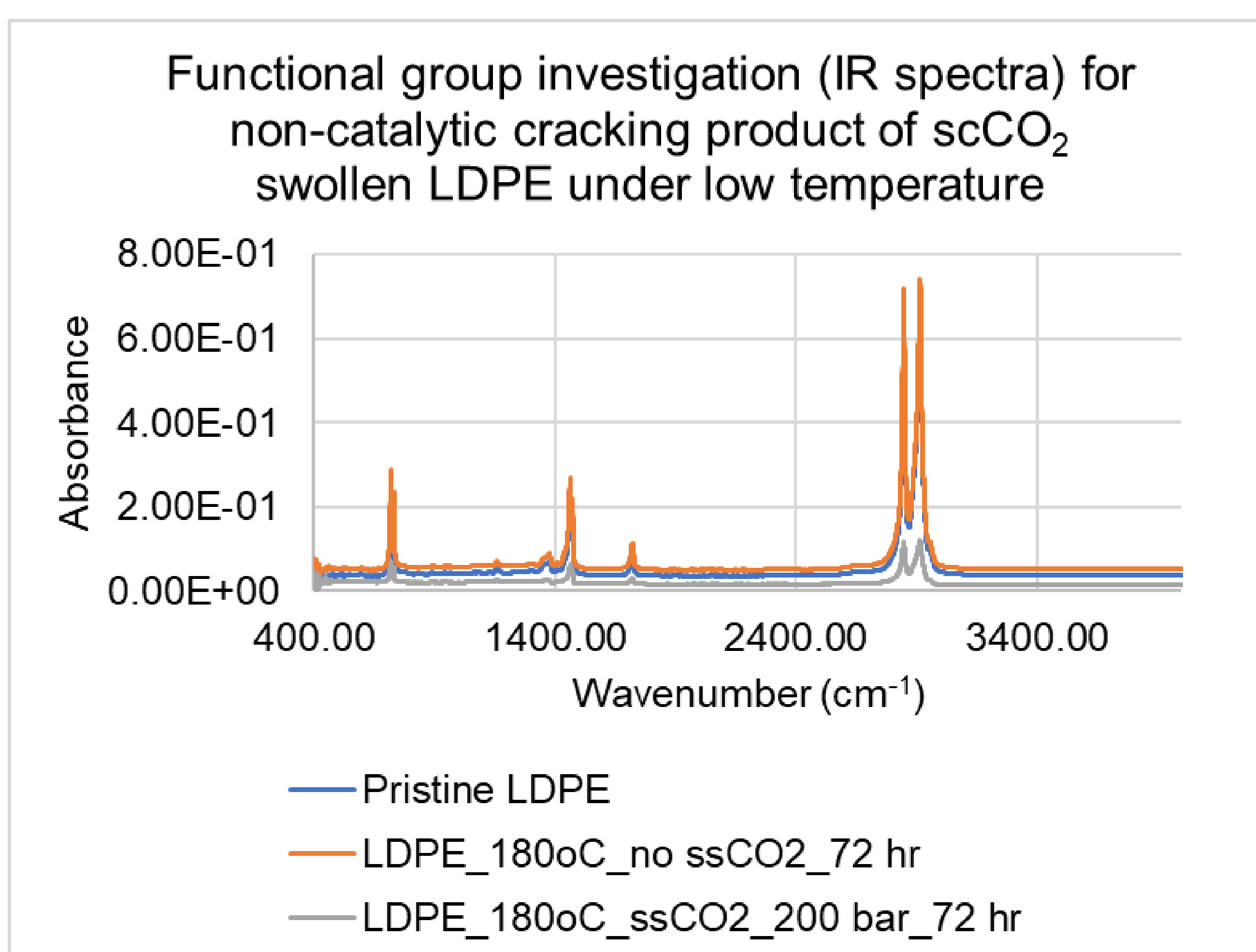
## Introduction

**Problem:** Limitation of existing recycling technologies and the non-ideal characteristics of catalytic cracking of polyolefins, which result in poor product quality and inefficiencies in producing high-value liquid hydrocarbons.

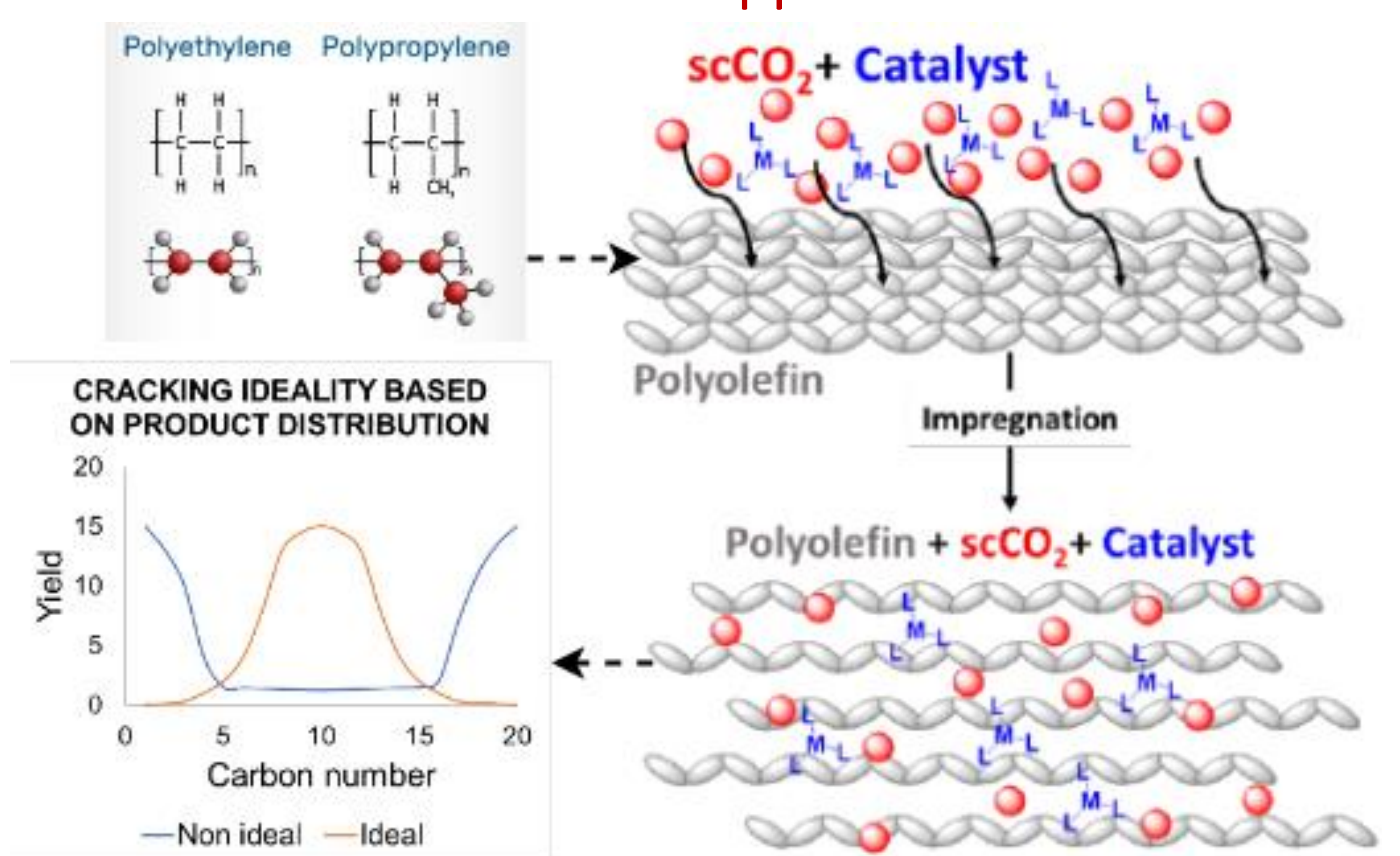


FUTURE OF PLASTIC UPCYCLING

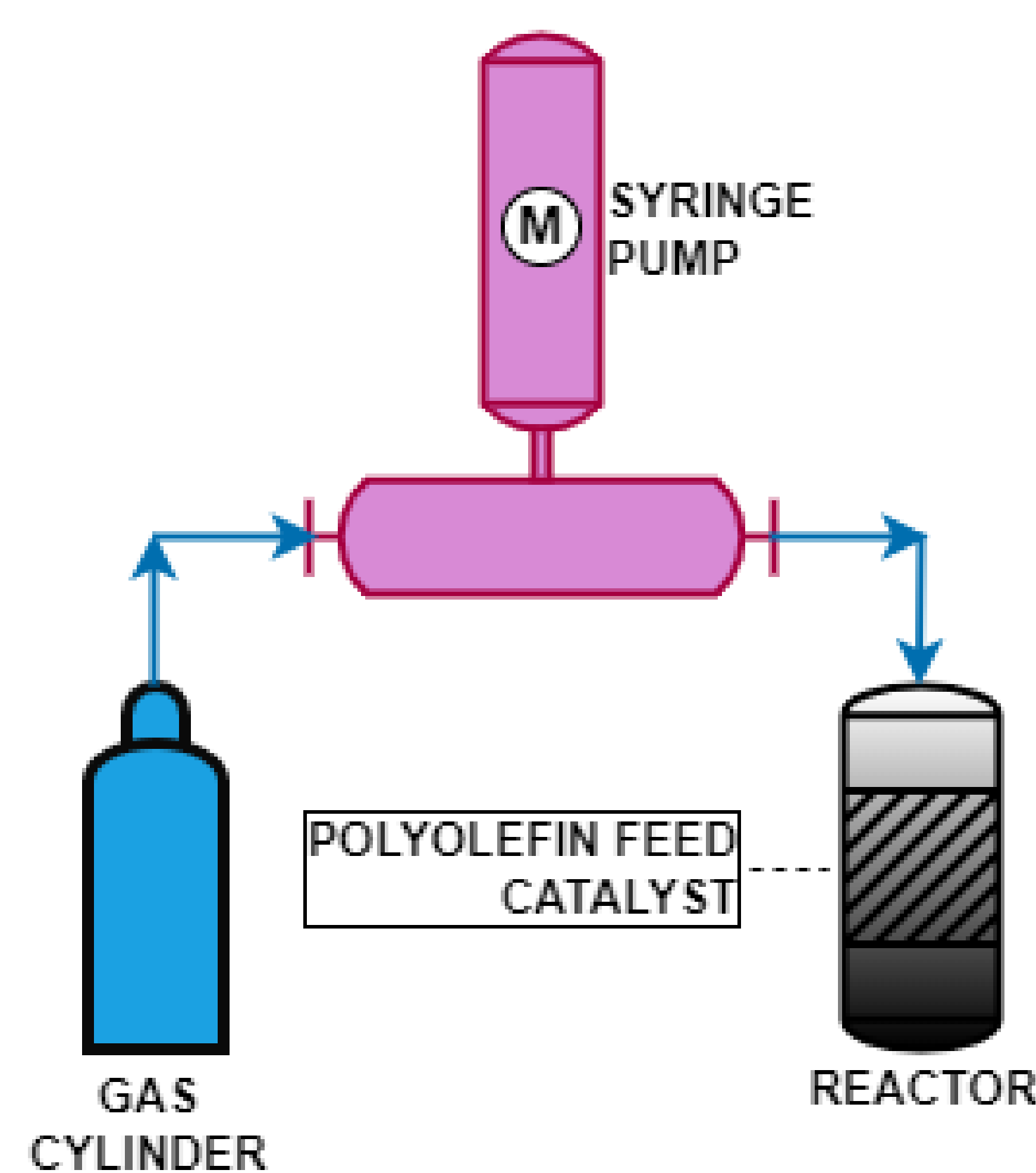
## Preliminary Data and Results



## Research Approach



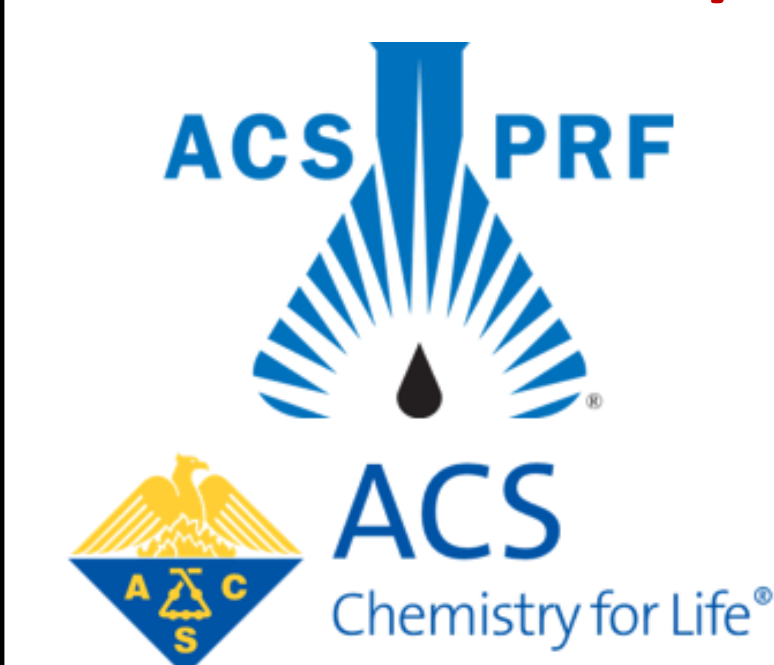
## Experimental Method



## References

- Kots, P. A., Vance, B. C., & Vlachos, D. G. (2022). Polyolefin plastic waste hydroconversion to fuels, lubricants, and waxes: a comparative study. *Reaction Chemistry & Engineering*, 7(1), 41-54.
- Rorrer, J. E., Ebrahim, A. M., Questell-Santiago, Y., Zhu, J., Troyano-Valls, C., Asundi, A. S., ... & Roman-Leshkov, Y. (2022). Role of bifunctional Ru/acid catalysts in the selective hydrocracking of polyethylene and polypropylene waste to liquid hydrocarbons. *ACS Catalysis*, 12(22), 13969-13979.
- Thybaut, J. W., Laxmi Narasimhan, C. S., Denayer, J. F., Baron, G. V., Jacobs, P. A., Martens, J. A., & Marin, G. B. (2005). Acid- metal balance of a hydrocracking catalyst: ideal versus nonideal behavior. *Industrial & engineering chemistry research*, 44(14), 5159-5169.

## Acknowledgments



American Chemical Society (ACS) Petroleum Research Funds (PRF) - Doctoral New Investigator (DNI) Grants

## Connect

ADISA HASSAN  
(Graduate Student)



JAMES SHEEHAN  
(Principal Investigator)

